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The Effect of Specialized Developmental Reading and Study Skills Instruction and Counseling on a Sample of Students with Above Average Quantitative and Below Average Verbal Skills.

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An investigation was made of the success of a developmental reading program with students possessing limited skills, the effect of reading instruction and counseling on grade point average, and the effect of reading instruction and counseling on attrition rate. Ninety freshmen students from the University of Missouri-Rolla were divided into three groups and matched on five psychometric variables. The experimental group was provided instruction in developmental reading and study skills; counseling service was provided on a voluntary basis and was initiated at the time of registration. All reading data were collected by pretest and post-test procedures. The semester hours attempted and passed, the semester grade point average, and the attrition rates were collected at the completion of each semester for 3 semesters. A significant difference was noted between initial and final reading rates without any significant decrease in comprehension; grade point averages were significantly higher, and attrition rate was significantly lower for the experimental group than for either control group. Subjects gave positive evaluations of the program and encouraged continuance and expansion. References and tables are included. (Author/MD)

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ABSTRACT

"The Effect of Specialized Developmental Reading and Study Skills Instruction and Counseling on a Sample of Students with Above Average Quantitative and Below Average Verbal Skills," Sawyer, Robert N.[1]

The purpose of the study was to investigate the success of a developmental reading program with students possessing limited skills; the effect of reading instruction and counseling on grade point average; and the effect of reading instruction and counseling on attrition rate. Ninety freshmen students were utilized as Ss. The sample was sub-divided into three groups and matched on five psychometric variables. The experimental group was provided instruction in developmental reading and study skills and counseling service was provided on a voluntary basis and was initiated at the time of registration. All reading data were collected by pre-post test procedures. The semester hours attempted and passed, semester grade point average, and attrition rates were collected at the completion of each semester for three semesters. A significant difference was discerned between initial and final reading rates without any significant decrease in the level of comprehension. A significantly higher grade point average was obtained at the end of the initial semester. The attrition rate was significantly lower for the experimental group than either control group. All Ss gave a positive evaluation to the program and encouraged continuance and expansion.

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The Effect of Specialized Developmental Reading and Study Skills Instruction and Counseling on a Sample of Students with Above Average Quantitative and Below Average Verbal Skills

by

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Presently, the demand for competent scientists and engineers is increasing while college enrollment in these scientific and technological areas is decreasing. One of the resulting challenges placed upon institutions serving the technological clientele is to provide additional special student services that will help insure graduation of the largest possible number of well-educated and socially adjusted scientists and engineers.

After considering the attrition among first semester engineering freshmen at the University of Wisconsin (2) in 1963, a conclusion was that "programs for remediation of deficiencies in previous training such as study skills clinics might be undertaken by engineering colleges desiring to minimize attrition of prospective engineers."

Numerous psychologically oriented counseling centers have been provided to assist students with their educational, vocational, and personal planning and adjustment. Fewer colleges and universities have provided specialized instruction in study skills and developmental reading for their students. Only a limited number of institutions have offered a combined program of study skills and developmental reading instruction with psychological counseling for their students. Because few institutions of higher education

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have as homogeneous a student body as that sampled in this study, the researcher desired to investigate the effects of a combined program of study skills and developmental reading instruction with psychological counseling upon a selected sample of engineering and science students possessing above average quantitative skills and below average verbal skills.

PROBLEM

The purpose of the investigation was threefold:

1. to ascertain the effect of a specialized program of study skills, developmental reading, and psychological counseling on the obtained grade point average of the experimental group;
2. to ascertain the degree of success associated with a developmental reading program when employed with an experimental group manifesting limited verbal skills; and
3. to ascertain the effect of a specialized program of study skills, developmental reading and psychological counseling on the attrition rate of the experimental group.

SAMPLE

Ninety beginning freshmen students at the University of Missouri-Rolla (UMR) were utilized as Ss. The sample was subdivided into three groups of thirty Ss. The Experimental Group represented freshmen students that had participated in the Summer Pre-Registration Program, 1966, and had volunteered for enrollment in the one hour, no credit, bi-weekly study skills and developmental reading program. Psychological counseling was available to the Ss as was felt necessary or desirable by the Ss and their instructors. The Control Group I represented freshmen Ss that also had participated in the same Summer Pre-Registration Program, but were not enrolled in the study skills and developmental reading program nor provided counseling. The Control Group II represented freshmen Ss that had not participated in the Summer Pre-Registration Program, and were not provided specialized instruction nor became involved in counseling.

The three groups were matched in terms of their declared major field of study and semester hour course load. The sample included ceramic, chemical, civil, electrical, mechanical, and metallurgical engineers as well as chemistry, geology, and mathematics students. The ninety Ss were also matched on the basis of their obtained quantitative and verbal scores on the Cooperative School and College Ability Test (SCAT). Further, the Ss were matched on the basis of scores earned on the Missouri College English Test (MCET) and the Missouri Mathematics Placement Test (MMPT). When compared with entering freshmen,

the percentile ranking for all Ss on the verbal variables was less than 24 and their ranking on the quantitative variables was greater than 70.

An analysis of variance(3) procedure was employed at the beginning of the project to discern if any statistically significant difference existed among the three groups on the obtained SCAT, MCET, and MMPT scores as well as semester hours attempted. No significant difference was found at the .05 level.

METHODOLOGY

The enrollment of all participants in the study was verified after the end of the late registration period. In two cases, Ss selected for participation in the Experimental Group and Control Group I did not arrive on campus to begin their class work. The criteria for the selection of the two substitute students was identical to the criteria employed in the selection of the original sample. Both control groups were selected in final form just after the close of the registration period.

Subsequent to the termination of the pre-registration program, the Experimental Group was contacted by letter and informed of the objectives of the project. Further, it was the intent of the investigator to provide a bridge for the students to assist in their transition from the high school academic setting to the university academic ~~school~~ setting.

The class meetings were scheduled for two hours weekly (T and Th) and the participants were to receive no academic credit. A course outline was provided and followed closely during the entire project. Counseling appointments were scheduled as the participants

or the instructors felt counseling was needed.

While the minute details of the methodology will not be discussed, the present investigator desires to point out that all reading test data were collected during the initial phases of the project and during the termination phase of the project. These data were obtained by employing the pre-post test procedure with alternate forms of a reading examination. The basic reading materials employed in the project were Miller's Increasing Reading Efficiency(4) and Maintaining Reading Efficiency(5) workbooks. This basic approach was supplemented with various mechanical devices. In addition, Robinson's Effective Study(7) textbook provided the basic frame of reference for the intensified instruction in study skills and study habits.

The first semester grade point average and semester hours passed were obtained at the end of the first semester. Also, during the following two semesters, data relative to the participants' grade point averages and attrition rates were collected and analyzed.

The analysis of variance technique(3) was utilized to investigate the differences between mean semester grade point averages of the three groups. Further, the same statistic was employed to ascertain the differences in mean semester hours attempted and completed by the experimental and both control groups. The critical region was established at the .05 level.

The "student's" t statistic(6) was employed to discern the differences of the pre-test mean reading scores (reading rate, comprehension, and efficiency) and post-test mean reading

scores. The critical region was established at the .01 level.

RESULTS

The primary purpose of this study was to investigate the relationship between specialized instruction in study skills, developmental reading and counseling and academic progress. Secondary objectives in the study were the following: (1) to investigate the degree of success associated with the developmental reading procedures when utilized with a highly scientific and technologically oriented sample with limited verbal skills; and (2) to initiate an investigation of the attrition rate of the experimental and control groups.

Contained in Table 1 are the analysis of variance summary tables for difference between mean semester hours attempted and semester hours completed for the Fall, 1966, Spring, 1967, and Fall, 1967 semesters for the experimental and control groups.

TABLE 1
ANALYSIS OF VARIANCE FOR THE DIFFERENCES AMONG SEMESTER HOURS ATTEMPTED AND SEMESTER HOURS COMPLETED

Semester	Variable	Source	df	MS	F
Fall, 1966	Sem. Hrs. Attempted				
		Treatment	2	3.82	1.82
		Error	87	2.10	
	Sem. Hrs. Completed				
		Treatment	2	21.24	2.43
		Error	87	8.73	
Spring, 1967					
	Sem. Hrs. Attempted				
		Treatment	2	12.59	1.01
		Error	83	12.45	
	Sem. Hrs. Completed				
		Treatment	2	39.97	2.16
		Error	83	18.54	
Fall, 1967					
	Sem. Hrs. Attempted				
		Treatment	2	.01	.002
		Error	66	3.36	
	Sem. Hrs. Completed				
		Treatment	2	.59	.029
		Error	66	20.47	

Not significantly different from zero at the .05 level.

Presented in Table 2 are the analysis of variance summmary tables for the difference between mean semester grade point averages for the Fall, 1966, Spring, 1967, and Fall, 1967 semesters for the experimental and control groups.

TABLE 2
ANALYSIS OF VARIANCE FOR THE DIFFERENCES
AMONG OBTAINED GRADE POINT AVERAGES

Semester	Source	df	MS	F
Fall, 1966				
	Treatment	2	1.48	3.53*
	Error	87	.42	
Spring, 1967				
	Treatment	2	.47	.77
	Error	83	.61	
Fall, 1967				
	Treatment	2	.87	1.31
	Error	66	.67	

*Significantly different from zero at the .05 level

Developmental Reading

Table 3 contains the means and standard deviations of the experimental group for the pre-test and post-test reading rates, reading comprehension, and reading efficiency scores. Also presented are the resultant "student's" t values from the statistical analysis regarding the test of equality between pre-test and post-test mean reading scores.

TABLE 3
MEANS, STANDARD DEVIATIONS, AND "STUDENT'S" t VALUES FOR TEST OF EQUALITY BETWEEN PRE- AND POST-READING SCORES

Variable		Pre	Post	"t"
Rate in Words per Minute				
	Mean	196.79	734.71	19.66*
	SD	40.81	456.44	
Comprehension in Percentage				
	Mean	80.07	73.96	2.07
	SD	11.46	10.61	
Efficiency in Words per Minute				
	Mean	156.54	514.69	6.60*
	SD	33.51	284.95	

*Significantly different from zero at the .01 level.

Attrition Rate

Indices of the attrition rate among the three groups are contained in Table 4. The numbers are based on the enrollment figures at the start of each successive semester.

TABLE 4
NUMBERS OF STUDENTS THAT HAVE ENROLLED DURING THE THREE SUCCESSIVE SEMESTERS

	Experimental	Control I	Control II
Fall, 1966	30	30	30
Spring, 1967	28	29	29
Fall, 1967	26	23	20

DISCUSSION

The analysis of variance (Table 1) of differences between mean semester hours attempted and semester hours completed by the experimental

and control groups suggests that there was no significant disparity between the groups for either variable. However, this analysis provides no data regarding the level at which the three groups completed the course work attempted.

When the semester grade point averages obtained by the three groups were submitted to an analysis (Table 2), a significant difference was discerned for the initial semester of the study and no sifnificant differences for the final two semesters. Further analysis of the first semester grade point averages by the Tukey(3) Method of Multiple Comparisons indicated a difference between the Experimental and Control II groups and apparently accounted for the rejection of the hypothesis of mean equality. The fact that a significant difference in grade point averages was discerned during the initial semester would suggest that the time spent in special instruction and counseling was valuable during the initial semester of enrollment. Further, it may suggest that the experimental group progressed more rapidly with their adjustment and transition from high school. Also discerned from the data was that the experimental group maintained a constant level of achievement and the two control groups improved to a level similar to the experimental group. This was especially the case during the third semester of enrollment when many of the students in the control groups had terminated their education. In essence, the withdrawal of the lower achieving students tended to make the groups more homogeneous in terms of grade point average.

The data presented in Table 3 strongly suggested that the reading phase of the experimental project was highly successful, both in terms of increased reading rate and no significant decrease in the level of

comprehension. Further, the efficiency scores indicated a high positive change which implies a more effective and efficienct reading process on the part of the experimental group as a result of the reading instruction. Discerned was the high level of comprehension at the onset of the project and the below-average reading rate. The rate was increased nearly three hundred percent without a significant loss in comprehension level. It would appear that the below-average verbal skills of the experimental group did not hinder their reading growth. The students seemed to be highly motivated to become involved in the reading program. They saw the reading skills as vitally important, both in terms of the present academic program and as an avenue for keeping abreast with a rapidly changing technological field.

Vitally important to all educators was the attrition rate of the three groups. These data were presented in Table 4. The fact was noted that the Control Group II had been reduced by 33% while the experimental group suffered only a 13% loss. Assuming these attrition rates will tend to level off as the participants approach graduation, this experimental approach would help considerably to assist students in successfully completing their education once initiated.

It seems reasonable to conclude that the experimental project was successful, both in terms of grade point average and reduced attrition rate. Further, it would appear that a developmental reading program can assist students with limited verbal abilities to progress toward more effective and efficient reading skills.

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